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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/807,636

Filing Date: March 23, 2004

Appellant(s): CHEN ET AL.

Raphael Freiwirth
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/15/2009 appealing from the Office action mailed 5/1/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|---------------------|-----------------------------|----------------|
| 6,058,308 | Kallin et al. | 5-2000 |
| 5,943,621 | Ho et al. | 8-1999 |
| 2003/0143999 | Funato et al. | 7-2003 |
| 2002/0187793 | Papadimitriou et al. | 12-2002 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 7-10, 13-16, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kallin et al. (US 6,058,308) (hereinafter referred to as Kallin) in view of Ho et al. (US 5,943,621) (hereinafter referred to as Ho), and further in view of Funato et al. (US 2003/0143999) (hereinafter Funato)

Regarding claims 1, 2, 7, 8, 13, and 14, Kallin discloses an apparatus and associated method for adaptively selecting a paging area in which to page a mobile terminal. In the scope of the invention, a selected number of pages is transmitted throughout a paging area when a mobile terminal is to be paged. If no acknowledgement of the page is detected by the network infrastructure, the paging area is adaptively altered, e.g. expanded (column 4, lines 21-25). This expansion includes

cells adjacent to the neighboring cells that may be defined to be cells positioned within a certain distance from the center of a cell (paging area that is centered at a cell) or on neighbor cell lists (predefined number) (column 4, lines 55-67). The paging area may also include a center cell, its neighbors, and neighbors of the neighbor cells (column 11, lines 33-35).

However, Kallin does not explicitly disclose receiving registration from the MS when the number of cells identified in a first list is equal to a predetermined limit. Ho discloses a method and apparatus in a communications system for tracking mobile stations (abstract). In the scope of the invention, a mobile device reports a cell ID as it moves to a new cell, which causes a movement counter to be incremented. If the reported cell ID is not already stored in a movement history stack then a path length is increased. If the path length is equal to a movement threshold (predetermined limit) register, a location update is performed (registration). Once the location update or registration is performed, the cell ID of the current cell (cell in which MS last registered) is maintained and all other cell IDs are removed from the movement history stack (figure 6). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kallin to limit the number of stored cell IDs as a mobile moves through a network, as taught by Ho, in order to significantly reduce unnecessary location updates occurring in known movement-based schemes and reduce signaling overhead due to location management.

In the combination of Kallin and Ho teaches moving of cells identified in a first list other than a cell in which the MS last registered, but is silent to what happens to the

removed cell IDs. The combination does not explicitly disclose that the removed cells are moved to a second list. Funato discloses a method and associated apparatus for distributed dynamic paging area clustering under heterogeneous access networks (title). In the scope of the invention, a mobile host (MH) includes a host reporting agent (HRA) that includes a reporter process (REPF), a previous location table (PLT) (second list), and a current location table (CLT) (first list). Funato teaches that as the MH moves the REPF updates both the PLT and CLT and registers the MH with a new area. When the MH moves from a current paging area to another paging area, the REPF registers the MH in the new paging area and moves the CLT information to the PLT (moving the cells identified in a first list other than a cell in which the MS last registered, to a second list) (pages 5, 6, paragraph 88). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Kallin and Ho to include moving the cells removed from the movement history stack to a second list, as taught by Funato, in order to maintain a movement history log and further distinguish between an active cell and a previously visited cell. By maintaining a movement history log, in accordance with Funato, a minimum paging area may be defined that takes consideration of the location probability of a mobile station. Furthermore, it is obvious to a skilled artisan that a movement history log can be utilized by the network for functions such as billing or for forwarding data in an IP network.

Regarding claims 3, 4, 9, 10, 15, 16, 21, and 22, Kallin discloses that a first MSC (BSC) might signal to a neighboring second MSC to help paging using a message. If the second MSC receives a paging response, a message is sent to the first MSC

indicating that additional paging is not necessary therefore showing that the information intended to be sent to mobile terminal has been sent (column 15, lines 40-54).

Regarding claims 19 and 20, the limitations are rejected as applied to claim 1.

The MSC of Kailin et al. renders the BSC set forth in the claim.

Claims 5, 6, 11, 12, 17, 18, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kallin et al. (US 6,058,308) (hereinafter referred to as Kallin), Ho et al. (US 5,943,621) (hereinafter referred to as Ho), and Funato et al. (US 2003/0143999) (hereinafter Funato), and further in view of Papadimitriou et al. (US 2002/0187793) (hereinafter referred to as Papadimitriou).

The combination of Kallin, Ho, and Funato discloses the limitations set forth in claims 1, 7, 13, and 19, but does not explicitly disclose that a MSC attempts to locate the mobile terminal if the BSC could not locate the target mobile terminal.

Papadimitriou discloses global paging of mobile stations in a wireless network using a MSC pool (title). In the scope of the invention, if a mobile station does not respond to a page from a BSC/RNC, then a global page of the mobile station is performed (page 3, paragraph 34). As can be seen in figure 3, the global paging area is a higher level in the hierachal structure of the system. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Kailin, Ho, and Funato to include another hierachal step above the MSC, as taught by Papadimitriou, in order to page a mobile efficiently by paging first in an area where the

mobile is likely to be located and then, if unsuccessful, in the next most likely area, and so on.

(10) Response to Argument

In response to appellant's assertion that a "new" motivation was provided in the Final rejection and that the motivation has shifted between office actions, the Examiner would like to clarify that the motivations were provided to further justify the combination of Funato, Kallin, and Ho and not to change any position taken.

In the Non-Final Rejection filed on 10/19/2007, the motivation for combining Kallin and Ho was stated to significantly reduce unnecessary location updates occurring in known movement-based schemes and reduce signaling overhead due to location management. Kallin and Ho was combined with Funato as stated to conserve battery power dissipated by the mobile terminal and minimize paging costs by reducing location updates when the mobile terminal moves back to a previously visited cell.

In the Final Rejection filed on 5/1/2008, the motivation for combining Kallin and Ho remained unchanged. The motivation for combining Kallin and Ho with Funato was stated to maintain a movement history log wherein a minimum paging area may be defined that takes into consideration of the location probability of a mobile station. This motivation was provided to further define how the addition of Funato would minimize paging costs by defining a minimum paging area, and not to replace or change the originally stated motivation. The Examiner also stated that it is obvious to a skilled artisan that a movement history log can be utilized by the network for functions such as

billing or for forwarding data in an IP network. This statement was made to provide a motivation that would have been obvious to one of ordinary skill in the art in addition to the previously stated motivation and not to shift the original motivation.

In the Advisory Action filed on 7/29/2008, the Examiner stated that one of ordinary skill in the art would recognize that this information may at one time in the future be valuable or needed by the network to perform particular functions such as billing or movement tracking and that the saving of erased or deleted data in case of future need is readily known in the art. This statement was made to further support the Examiner's position that a movement history log can be utilized by the network for functions such as billing and again not to shift the original motivation.

i. Legal Standards

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

ii. Claim Construction

Appellant asserts that the claim limitations are directed to paging a target mobile station in a paging area that is centered at a cell, and receiving registration from the

mobile station. Registration is received from a mobile station (MS) when a number of cells in a first list is equal to a predetermined number. As part of the registration, the MS will move the cells identified in the first list, other than a cell in which the MS last registered, to a second list.

The Examiner respectfully disagrees that the paging is linked to "receiving registration from the mobile station". In defining paging, the claim limitations state that the target MS is paged at a paging area that is centered at a cell in which the target MS **last registered (emphasis added)** and does not make mention of receiving any registration from the MS for performing this function. There is no linking between paging and receiving a registration in the claim language.

iii. Analysis

a. Separate argument for independent claim 1

In response to appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to appellant's assertion that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Kallin pertains to a paging technique for tracking or locating a mobile terminal that begins to page the terminal beginning at the last registered cell (column 1, lines 20-32; column 7, lines 44-54; column 8, lines 42-54). Ho pertains to a location update or reporting procedure performed by a mobile terminal based on movement between cells (figure 6). Funato pertains to paging, registration, and tracking a mobile terminal (paragraphs 4, 5, 38, 41). As known in the art, paging may be utilized by a wireless communication system to locate a mobile terminal and location updating, or registration, may be utilized by a mobile terminal for reporting a location to a wireless communication system. Paging and registration are related in that registration allows a wireless communication system to track or locate a wireless terminal and this location may be used by the wireless communication system to implement or facilitate in paging. Kallin, Ho, and Funato are examples of this relation in that all three inventions pertain to monitoring or tracking the location of a mobile terminal and are therefore combinable.

The mobile terminal used in the system of Kallin is modified with the registration (location update) teachings wherein the paging system of Kallin would receive location

updates, or registration, when a movement threshold is reached by the mobile terminal instead of after every cell change. This would as stated reduce unnecessary location updates and reduce signaling overhead. Evidence for this motivation is provided in Ho in column 8, lines 50-56 and column 9, lines 4-12.

In the combination of Kallin and Ho, the mobile terminal is further modified to maintain the cell IDs of the movement history in a previous location table to conserve battery power dissipated by the mobile terminal and minimize paging costs by reducing location updates when the mobile terminal moves back to a previously visited cell. Evidence for this motivation is found in Funato in paragraphs 4 and 11.

In response to appellant's assertion that the combination of Kallin, Ho, and Funato does not teach or suggest the MS having moved the cells identified in the first list, other than a cell in which the MS last registered, to a second list, the Examiner respectfully disagrees. A recitation of the claim language with corresponding citations is shown below for reference:

receiving registration (location update) from the MS (Ho; figure 6, item 614) when a number of cells identified in a first list (movement history stack) is equal to a predetermined limit (movement threshold) (Ho; figure 6, item 612) and the MS having moved the cells identified in the first list (Ho; figure 6, item 614; Funato; paragraph 88), other than a cell in which the MS last registered (Ho; figure 6, item 614; ID of current cell is not removed), to a second list (Funato; paragraph 88; moving information of a current location table to a previous location table).

Ho teaches maintaining the cell for which the MS last registered in the first list but is silent to what happens to the removed cell IDs in item 614. Funato pertains to maintaining a current location table and a history location table. Funato teaches that when a mobile terminal moves from one paging area, information from a current location table is moved to a previous location table, thus broadly teaching maintenance of current information and previous information in two distinguished tables and moving the current information to a previous information table when an update occurs. Thus in the combination of the inventions, the current cell ID would be maintained as taught by Ho and the removed cell IDs would be moved to a previous location table or second list as taught by Funato.

In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

b. Separate argument for independent claim 7

The arguments applied to claim 1 above are also applicable to this claim.

c. Separate argument for independent claim 13

The arguments applied to claim 1 above are also applicable to this claim.

b. Separate argument for independent claim 19

The arguments applied to claim 1 above are also applicable to this claim.

iv. Claims 3, 4, 6, 8-10, 14-16, 23, and 24

The claims depend on the aforementioned independent claims above and appellant asserts that these claims are patentable for the reasons set forth above in regards to the independent claims. Based on the arguments applied to the independent claims, these claims are not patentable.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Nam Huynh/

Examiner, Art Unit 2617

Conferees:

/George Eng/

Supervisory Patent Examiner, Art Unit 2617

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617